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Cytokines and stem cell mobilization for autologous and allogeneic transplantation.

Cashen AF, Link D, Devine S, DiPersio J.

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Mobilized peripheral blood has become the preferred source of stem cells for both autologous and allogeneic transplantation, and granulocyte colony-stimulating factor is the most widely used cytokine for mobilization. However, the mechanisms of cytokine-induced peripheral blood stem cell mobilization are not completely understood. Several recent studies suggest a model in which proteases released into the bone-marrow microenvironment during cytokine treatment play a critical role in mobilization. However, the finding that progenitor mobilization is normal in certain protease-deficient mice suggests that this model may be too simplistic. Here we review recent studies that advance our understanding of the biology of stem cell mobilization. We then discuss cytokines in current use and in development for mobilization of autologous and allogeneic peripheral blood stem cells.

PMID: 15496273 [PubMed - indexed for MEDLINE]

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Cytokine-primed bone marrow stem cells vs. peripheral blood stem cells for autologous transplantation: a randomized comparison of GM-CSF vs. G-CSF. [Blood Marrow Transplant. 1997]

Long-term marrow reconstitutive ability of autologous grafts in lymphoma patients using peripheral blood mobilized with granulocyte colony-stimulating factor or granulocyte-macrophage colony-stimulating factor compared to bone marrow. [Exp Hematol. 2003]

The role of granulocyte colony-stimulating factor in mobilization and transplantation of peripheral blood progenitor cells. [Transfusion. 1995]

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